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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,906	11/21/2005	David McLeod	017058-0310800	7008
909 7590 01/17/2008 PILLSBURY WINTHROP SHAW PITTMAN, LLP P.O. BOX 10500 MCLEAN, VA 22102			EXAMINER KITOV, ZEEV V	
			ART UNIT 2836	PAPER NUMBER
			MAIL DATE 01/17/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/522,906	<b>Applicant(s)</b> MCLEOD ET AL.	
	<b>Examiner</b> Zeev Kitov	<b>Art Unit</b> 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 - 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 5 and 11, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norton et al. (US 4,808,115) in view of Olsson (US 5,949,300) and Fayfield (US 5,644,730). Regarding Claims 1, 11 and 12, Norton et al. disclose a housing (128 in Fig. 3) and connectors (50 in Fig. 3) to the housing (col. 8, line 43 to col. 9, line 44); the connectors (50 in Fig. 3) are configured to be coupled to the circuit cards (38, 40 in Fig. 3, col. 6, line 63 – col. 7, line 23). The connectors (50 in Fig. 3) are disposed exterior to the housing (col. 1, lines 14 – 42). However, it does not disclose an isolation circuitry within the housing. Olsson discloses the isolation circuitry, such as isolation transformers (25, 27 in Fig. 1) located within the housing (41 in Fig. 1). Olsson also discloses his isolation means being located inside the shielded housing (41 in Fig. 1). The reference is pertinent to the case since it deals with the communication bus wiring connections and particularly discloses isolation of the bus elements. Modification of Norton et al. apparatus according to teachings of Olsson will bring benefit of providing a galvanic DC isolation between the circuit card and peripheral devices and between different peripheral devices interconnected through the circuit card. Such modification

will not bring any unusual or unexpected result. Such modification was recognized as part of the ordinary capabilities of one skilled in the art. Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have add the isolation transformers of Olsson to the housing of Norton et al., because (a) it provides a DC galvanic isolation and prevents short-circuiting between the peripheral devices and the circuit card and between different peripheral devices connected together through the circuit card; (b) such isolation is required by MIL-STD-1553 standard and since the Norton system is intended for use in aviation industry (col. 1, lines 14 – 42) the requirements of this standard are to be met, otherwise the manufacturer will not be able to sell his substandard equipment. In the Norton et al. system modified according to teachings of Olsson the isolation transformer is located inside the housing since (a) the Olsson transformer is located in the shielded housing (see Abstract) and (b) according to Norton et al. (see Abstract), a metal shroud of the LRM connector provides EMI shielding. Therefore, there are sufficient preconditions for placing the shielded transformer of Olsson inside the LRM module thus combining two shieldings together. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to set the shielded transformer of Olsson inside the replaceable module of Norton et al. because in such case a substantial saving of space, cost and material will be achieved.

Additionally Norton does not disclose the network bus coupler coupling a bus to a device connected to the circuit card. Fayfield discloses the network bus coupler (shown in Fig. 4) coupling a bus (110 in Fig. 4) to a device connected to the circuit card

through junction box (108 in Fig. 4, col. 5, lines 30 - 58). Applying the Norton LRM design modified according to teachings of Olsson for implementing an electrical solution of Fayfield will advantageous for manufacturer of the Norton system because it will provide them with expanded market niche. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the Norton LRM design modified according to teachings of Olsson for implementing the bus coupler of Fayfield, because it will provide an expanded market niche for manufacturer of the Norton system.

Regarding Claim 2, the connectors of Norton et al. (see Fig. 3) have a plurality of pins (562, 54 in Fig. 3).

Regarding Claim 3, the recited connector pins are adapted for insertion into their mating pair (160 in Fig. 3),

Regarding Claim 4, Norton et al. disclose the female connectors (160 in Fig. 3) at the bottom of the circuit card (mother-board in Fig. 3), having the receptive sockets for insertion of pins of the male connector of functional modules (52, 54 in Fig. 3).

Regarding Claim 5, Olsson discloses the isolation element as the isolation transformer (25, 27 in Fig. 1). A motivation for modification of the primary reference is the same as above.

Claims 7, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fayfield in view of Norton et al. and Olsson. Regarding Claim 7, Fayfield discloses following elements of the claim: a junction box (108 in Fig. 4, col. 5, lines 53 – 58). It

further discloses the network bus coupler (10 in Fig. 2) coupling the bus to the device (20 in Fig. 2). Fayfield discloses the network bus coupler disclosing some modular structural elements (Fig. 3). However, it does not disclose the overall modular structure with possible modularity of all elements. Norton et al. disclose following elements of the claim: a modular interconnection structure shown in Fig. 3, a circuit card (20 in Fig. 1 and 3) including plurality of sockets in female connectors (Fig. 3), modular bus/line coupler in form of line replaceable modules (LRM) are shown in Fig. 3. It further discloses plurality of modules having housing (12 in Fig. 1 and 3) having a plurality of pins (shown in Fig. 3) disposed exterior of their housing, which are engageable with some of the sockets of connectors (160 in Fig. 3) of the circuit card/mother board (20 in Fig. 1 and 3). In the Fayfield system modified according to teachings of Norton et al. the network bus is mountable and coupled to the circuit card (20 in Fig. 3), and the device is connected to the circuit board since all the modules and their circuits are interconnected through the circuit board. The advantage of Norton modular solution is that all the modules are replaceable, which is essential for repair and maintenance. It has been obvious to one of ordinary skill in the art at the time the invention was made to built a whole structure of network bus interconnection in completely modular form because (a) such solution has an advantage providing easy assembly and replacement for damaged parts of the system and (b) a particular technique of using modular structure for assembly of the electronic systems was recognized as part of the ordinary capabilities of one skilled in the art.

An additional lacking element of the claim is an isolation circuitry, which is disclosed by Olsson (isolation transformer (25, 27 in Fig. 1). It would be obvious to one of ordinary skill in the art at the time the invention was made to have added the isolation transformers of Olsson to the system of Norton et al., because (a) both Norton and Olsson references deal with avionic systems, and (b) according to Olsson (col. 1, lines 14 - 30), such isolation is required by MIL-STD-1553 standard and since the Norton system is intended for use in aviation industry (col. 1, lines 14 – 42) the requirements of this standard are to be met, otherwise the manufacturer will not be able to sell his substandard equipment. Such modification, i.e. use of transformers for providing DC galvanic isolation was recognized as part of the ordinary capabilities of one skilled in the art.

Regarding Claim 8, Olsson discloses the isolation transformers (see above).

Regarding Claim 10, Olsson discloses an aviation component, since MIL-SRD-1553 standard is the standard specific for an aircraft.

Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norton et al. in view of Olsson, Fayfield and Shaffer (US 5,841,778). Regarding Claim 6, Norton et al. disclose the connectors disposed exterior of the module housing (see Fig. 3). Shaffer discloses a bus terminator (elements 110 and 160 in Fig. 1) disposed in the housing and electrically coupled to a connector. In the Norton system modified according to teachings of Shaffer, the terminators are inherently connected to the connectors leading to the communication cables, i.e. located outside the housing. The

reference is pertinent to the case since it discloses the communication bus arrangement. It would be obvious to one of ordinary skill in the art at the time the invention was made to have add the terminator elements according to Shaffer to the Norton et al. system, because as well known in the art, it would prevent the signals reflection from the ends. Use of terminations for prevention of signals reflection in the electrical lines was recognized as part of the ordinary capabilities of one skilled in the art.

Regarding Claim 9, Shaffer discloses a bus terminator (elements 110 and 160 in Fig. 1) disposed in the housing and electrically coupled to a connector. A motivation for modification of the primary reference is the same as above.

### ***Response to Arguments***

Applicant's Arguments have been given careful consideration but they are mostly moot in view of new ground(s) of rejection. However, some of them are to be addressed.

Applicant attacks the Norton reference for not disclosing an isolation circuitry while the isolation circuitry is disclosed by Olsson (page 7, 3<sup>rd</sup> paragraph). In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).



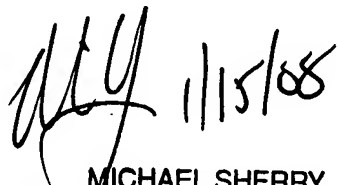
***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose current telephone number is (571) 272 - 2052. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry, can be reached on (571) 272 – 2800, Ext. 36. The fax phone number for organization where this application or proceedings is assigned is (571) 273-8300 for all communications.

Z.K.  
1/8/2008

  
1/15/08  
MICHAEL SHERRY  
SUPERVISORY PATENT EXAMINER